ความชุกและปัจจัยเสี่ยงของความเครียดในสตรีตั้งครรภ์

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Prevalence and Associated Factors of Stress in Pregnancy

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บทคัดย่อ

หลักการและวัตถุประสงค์: สมาคมสูตินรีแพทย์ของประเทศสหรัฐอเมริกา (ACOG) ให้คำแนะนำตรวจคัดกรองความเครียดในสตรีตั้งครรภ์ทุกคน สำหรับประเทศไทยนั้นมีการใช้แบบประเมินเอสทีไฟว์ (ST-5) ในการประเมินความเครียดสำหรับประชาชนทั่วไป อย่างไรก็ตามยังไม่มีการศึกษาที่แสดงความเที่ยงและความเชื่อถือได้ของแบบประเมิน ST-5 นี้ เมื่อนำมาใช้กับสตรีตั้งครรภ์ ดังนั้นการศึกษานี้จึงมีวัตถุประสงค์หลักเพื่อหาความชุกของความเครียดในสตรีตั้งครรภ์และวัตถุประสงค์รองเพื่อหาปัจจัยที่สัมพันธ์กับความเครียดในสตรีตั้งครรภ์ และวัดความเที่ยงและความสอดคล้องของแบบประเมิน ST-5 เทียบกับ Thai GHQ-28

วิธีการศึกษา: เป็นการศึกษาแบบตัดขวางที่ห้องฝากครรภ์ โรงพยาบาลศรีนครินทร์ มหาวิทยาลัยขอนแก่น สตรีตั้งครรภ์ที่มาฝากครรภ์และเข้าร่วมงานวิจัยจะได้รับการทำแบบประเมิน ST-5 และ Thai GHQ-28 ด้วยตนเองการแปลผลหากคะแนนรวมมากกว่า 4 คะแนนของแบบประเมิน ST-5 หรือมากกว่า 5 คะแนนของแบบประเมิน Thai GHQ-28 ถือว่ามีความเครียด

ผลการศึกษา: พบว่าสตรีตั้งครรภ์จำนวน 351 ราย มีความชุกของความเครียดโดยใช้แบบประเมิน Thai GHQ-28 เท่ากับร้อยละ 13.64 แบบประเมิน ST-5 มีค่าสัมประสิทธิ์แอลฟาครอนบัค 0.824 มีค่าสัมประสิทธิ์สหสัมพันธ์แบบสเปียร์แมน 0.426 (95%CI 0.337-0.508, p<0.001) เมื่อเทียบกับแบบประเมิน Thai GHQ-28 ปัจจัยเสี่ยงที่เพิ่มความเครียดขณะตั้งครรภ์ ได้แก่ มีภาวะแทรกซ้อนทางสูติศาสตร์ขณะตั้งครรภ์ ประวัติดื่มแอลกอฮอล์ และมีสมาชิกในครอบครัวเป็นโรคทางจิตเวช โดยมีค่า Adjusted OR เท่ากับ 2.51 (95%CI 1.04-6.08; p = 0.040), 2.90 (95%CI 1.34-6.28; p = 0.007) และ 12.19 (95%CI 2.10-70.75; p = 0.005) เมื่อเทียบกับกลุ่มไม่มีปัจจัยเสี่ยงตามลำดับ

สรุป: ความชุกของความเครียดในสตรีตั้งครรภ์โดยใช้แบบประเมิน Thai GHQ-28 เท่ากับร้อยละ 13.64 แบบประเมินความเครียด ST-5 มีความสอดคล้องน้อยเมื่อเทียบกับแบบประเมิน Thai GHQ-28 ปัจจัยเสี่ยงที่เพิ่มความเครียดขณะตั้งครรภ์ ได้แก่ มีภาวะแทรกซ้อนทางสูติศาสตร์ขณะตั้งครรภ์ ประวัติดื่มแอลกอฮอล์ และมีสมาชิกในครอบครัวเป็นโรคทางจิตเวช

คำสำคัญ: ความเครียด, แบบประเมินความเครียด ST-5, แบบประเมินความเครียด Thai GHQ-28

Abstract

Background and Objective: The American College of Obstetricians and Gynecologists (ACOG) recommended to screen psychosocial stress during pregnancy. In Thailand, the ST-5 self-reported screening stress questionnaire was widely used in the general population because of simple to understand and easy to complete. However, no previous study had assessed the reliability and validity of the ST-5 questionnaire when used with pregnancy. The primary objective of this study was to establish the prevalence of stress in pregnancy. The secondary objectives were to evaluate the associated factors of stress and investigate the correlation between the ST-5 and Thai GHQ-28 questionnaires.

Materials and Methods: The cross-sectional study was conducted at Srinagarind Hospital, Khon Kaen University. The ST-5 and Thai GHQ-28 questionnaires were completed by pregnant women. Total scores greater than 4 of ST-5 questionnaires and more than 5 of Thai GHQ-28 questionnaires were considered for screening stress positive.

Results: Three hundred and fifty-one pregnancies were recruited. The prevalence of stress using the Thai GHQ-28 questionnaire was 13.64%. The ST-5 questionnaire showed good internal consistency with Cronbach's alpha (α) 0.824 but low convergent validity compared with the Thai GHQ-28 questionnaire, rs 0.426 (95%CI 0.337-0.508, p<0.001). Factors including a history of obstetric complications comorbidity, alcohol consumption and the occurrence of family members with psychiatric disorders significantly increased stress with adjusted OR 2.51 (95%CI 1.04-6.08, p = 0.040), 2.90 (95%CI 1.34-6.28, p = 0.007) and 12.19 (95%CI 2.10-70.75, p = 0.005), respectively.

Conclusion: Prevalence of stress in pregnancy was 13.64%. The ST-5 questionnaire gave a low correlation with the Thai GHQ-28 questionnaire. History of obstetric complication comorbidities, alcohol consumption or family members with psychiatric disorders were significantly increased risk of stress.

Keywords: stress, ST-5 questionnaire, Thai GHQ-28 questionnaire

Introduction

Prenatal stress was defined as psychological distress experienced by pregnant women[1]. Increased stress during pregnancy contributes to psychological disorders later in their life[1]. The prevalence of stress during pregnancy ranges from 5.5%[1] to 91.86%[2], depending on the criteria used. Pregnancy-specific factors such as teenage pregnancy, unintended pregnancy, or fear of negative pregnancy outcomes may increase prenatal stress[3]. Accumulation of stress leads to adverse pregnancy outcomes such as preterm birth (PTB), preterm premature rupture of membrane (PPROM) and low birth weight (LBW)[4,5]. Recognition of prenatal stress by healthcare providers may reduce the chance of adverse perinatal outcomes[1].

The American College of Obstetricians and Gynecologists (ACOG, 2018)[6] recommended full assessment of mood and emotional well-being with a validated instrument for each patient. There are many tools that used for screening stress in pregnancy including the general health questionnaire (GHQ). The GHQ was developed by Goldberg in 1978 as a 28-item measure of emotional distress in medical settings and had been translated into 38 languages including Thai[7]. The GHQ, as a scaled questionnaire that provides four measurement scores representing somatic symptoms, anxiety and insomnia, social dysfunction and severe depression can be adapted depending on individual requirements[7]. The Thai General Health Questionnaire 28 (Thai GHQ-28), modified from the GHQ-28 by Nilchaikovit et al[8] and validated in the Thai population, gave a Cronbach's alpha (α) of 0.84-0.94, with specificity 84.4-89.7% and sensitivity 78.1-85.3%.

The ST-5 self-reported questionnaire, developed by Silpakit[9], was used for screening stress in general population. The ST-5 questionnaire has been widely used in the Thai antenatal care book however, no previous studies had assessed the reliability and validity when used with pregnancy. Here, our primary objective was to determine the prevalence of stress in pregnancy, with two secondary objectives of examining the validity and reliability of the ST-5 questionnaire compared with the Thai GHQ-28 and evaluating the associated stress factors.

Materials and Methods

This cross-sectional study was conducted at Srinagarind Hospital, Khon Kaen University, with the approval of the KKU Ethics Committee in Human Research (HE631142). The study population comprised pregnant women who attended the antenatal clinic between October 2020 and March 2021. Inclusion criteria were pregnant women 18 years old or older with confirmed pregnancy by urine pregnancy test or ultrasound of any gestational age and who understand the Thai language. Pregnant women with co-morbidities such as diabetes mellitus, chronic hypertension or multiple pregnancies were also included to explore the associated factors of stress. Exclusion criteria were pregnant women with underlying psychiatric problems such as depressive or anxiety disorders. All participants gave written informed consent before enrollment. After collection of routine history, two stress questionnaires were completed by each participant, with the Thai GHQ-28 used as a reference stress measurement. The Thai GHQ-28 comprised 28 items and divided into 4 categories including somatic symptoms (items 1-7), anxiety/insomnia (items 8-14), social dysfunction (items 15-21) and severe depression (items 22-28)[8]. This reliable questionnaire identifies minor psychiatric disorders, including stress problem (items 8-21). Participants were asked to rate their feelings concern each question according to the following criteria: better than usual, same as usual, worse than usual and much worse than usual. Scores were calculated using a binary system of 0 for better than usual or same as usual and 1 for worse than usual or much worse than usual. If the total score more than 5, referred to positive screening, the participants were interviewed by obstetricians and sent to the psychiatrist if necessary.

The ST-5 questionnaire consists of 5 items that described subjective feelings over the past 2 to 4 weeks. Participants were asked to rate these items on a 0 to 3 scale, where 0 = 'never or rarely', 1 = 'sometimes', 2 = 'often' and 3 = 'always. A total score of 4 or less indicated mild stress, score 5-7 moderate stress, score 8-9 severe stress, and score 10-15 extremely severe stress. Permission to use the two questionnaires was obtained from the authors. The sample size was calculated for primary objective, with estimated prevalence of stress in pregnancy at 34%[10]. The required number of women for the study was determined as 345.

Statistical analysis

Descriptive statistics were reported as frequency and percentage for categorical data. Continuous data were reported as mean and standard deviation (SD) or median and interquartile range (IQR), depending on the distribution. For convergent validity, the correlation between the ST-5 and Thai GHQ-28 questionnaire was reported using Spearman's rank correlation coefficient (rs) as little if any correlation

(rs 0.00-0.30), low correlation (rs 0.30-0.50), moderate correlation (rs 0.50-0.70), high correlation (rs 0.70-0.90) and very high correlation (rs 0.90-1.00). Reliability for inter-item correlation of the ST-5 score was assessed for internal consistency using the Cronbach's alpha as unacceptable (less than 0.5), poor (0.5-0.6), questionable (0.6-0.7), acceptable (0.7-0.8), good (0.8-0.9) and excellent (more than 0.90). Associated stress factors were analyzed with univariate and multivariate analysis. For multivariable logistic regression models, we used both maternal age and gestational age to be adjusted factor. Additional adjusted variables, including a history of alcohol consumption and psychiatric disorder of family members, were selected from the significant factor of univariate analysis (p<0.02). All analyses were conducted using Stata version 10.1 software, with confidence level of 95% at a significance level of p<0.05.

Results

A total of 351 pregnant women were recruited. Prevalence of stress in pregnancy using the Thai GHQ-28 questionnaire was 13.64%. Table 1 displayed baseline characteristics of pregnant women. Overall, the mean age of pregnant women was 29.3 ± 5.18. For reliability testing, the ST-5 questionnaire showed good internal consistency, with Cronbach's alpha 0.824. For convergent validity, the ST-5 questionnaire showed rs at 0.426 (95%CI 0.337-0.508, p<0.001) with total scores of Thai GHQ-28. Subgroup analysis of the ST-5 scores with each part of the Thai GHQ-28 scores was presented in Table 2. Table 3 showed unadjusted odds ratios for associated factors of stress in pregnancy. For univariate analysis, history of alcohol consumption and family members who had psychiatric disorder were increased risk with odds ratios of 3.98 (95%CI 2.10-7.54, p<0.001) and 17.38 (95%CI 3.27-92.41, p<0.001), respectively. Table 4 demonstrated multi-variate analysis, factors including history of obstetric complications comorbidity, those who consumed alcohol and those with family members who had psychiatric disorders stress during pregnancy significantly increased risk with adjusted OR 2.51 (95%CI 1.04-6.08), p = 0.040, 2.90 (95%CI 1.34-6.28), p = 0.007 and 12.19 (95%CI 2.10-70.75), p = 0.005, respectively. The most common obstetric complications were diabetes mellitus (31.24%) and threatened abortion (20.82%). Twenty-one percentage of the women had a history of alcohol consumption with a frequency of drinking alcohol 1-2 times per month (data did not demonstrate).

Table 1 Baseline characteristics of pregnant women.

Characteristic	n (%)
Age (years), mean±SD	29.30±5.18
BMI (kg/m^2), mean±SD	26.04±4.69
Gravidarum	
1	148 (42.17)
2	147 (41.88)
≥3	56 (15.95)
History of previous abortion	63 (17.94)
Pregnancy interval (year)	
<1	42 (20.69)
1-2	27 (13.30)
>2	134 (66.01)
History of obstetric complications comorbidity	50 (14.24)
Education	
Below Bachelor's degree	165 (47.00)
Bachelor's degree or higher	186 (52.99)
Income less than 300 baht/day	93 (26.49)
Relationship	
Living together	321 (91.45)
Divorced or separated	12 (3.41)
Duration of marriage before pregnancy (year)	
<1	83 (23.64)
1-5	176 (50.14)
>5	92 (26.21)
Unplanned pregnancy	102 (29.05)
History of alcohol consumption	
None	275 (78.34)
Sometimes (1-2 times per month)	75 (21.36)
Frequently (every week)	1 (0.28)
Treatment method	
Self-pay	146 (41.59)
Social Security Scheme	21 (5.98)
State Enterprise Officer	112 (31.90)
Welfare Scheme	72 (20.51)

Table 2 Convergent validity between ST-5 and each part of Thai GHQ-28 questionnaire.

Thai GHQ-28 questionnaire	Spearman's rank correlation rs (95%CI)	p-value
Items 1-28 (total scores)	0.426 (0.337-0.508)	< 0.001
Items 1-7 (somatic symptoms)	0.328 (0.231-0.418)	< 0.001
Items 8-14 (anxiety/insomnia)	0.476 (0.391-0.553)	< 0.001
Items 15-21 (social dysfunction)	0.273 (0.174-0.367)	< 0.001
Items 22-28 (severe depression)	0.166 (0.062-0.266)	0.002

Table 3 Unadjusted Odds Ratio for associated factor of stress.

Associated factor	Unadjusted Odds Ratio (95%CI)	p-value
Maternal age (year)		0.823
20-34[†]	1.00	
<20 or ≥35	0.92 (0.42 - 1.99)	
BMI (kg/m^2)		0.069
18.5 - 22.9[†]	1.00	
<18.5 - ≥23	0.55 (0.29 - 1.05)	
Number of children in house		0.323
≥1[†]	1.00	
None	1.37 (0.74 - 2.54)	
Gestational age (week)		0.069
>28[†]	1.00	
<14	2.69 (1.18 - 6.13)	
14-28	1.22 (0.54 - 2.75)	
History of previous abortion		0.957
No[†]	1.00	
Yes	1.02 (0.45 - 2.32)	
Pregnancy interval (year)		0.919
1-2[†]	1.00	
<1	0.85 (0.19 - 3.79)	
>2	0.78 (0.24 - 2.55)	
Obstetric complications comorbidity		0.141
No[†]	1.00	
Yes	1.79 (0.82 - 3.90)	
Education		0.627
Bachelor's degree or higher[†]	1.00	
Below Bachelor's degree	0.86 (0.46 - 1.59)	
Income (baht/day)		0.675
≥300[†]	1.00	
<300	0.85 (0.41 - 1.79)	
Duration of marriage before pregnancy (years)		0.620
1-5[†]	1.00	
<1	1.14 (0.52 - 2.53)	
>5	0.73 (0.31 - 1.73)	
Planned pregnancy		0.092
Yes[†]	1.00	
No	1.74 (0.92 - 3.29)	
History of alcohol consumption		<0.001
No[†]	1.00	
Yes	3.98 (2.10 - 7.54)	
Family member has psychiatric disorder		<0.001
No[†]	1.00	
Yes	17.38 (3.27 - 92.41)	

[†] Reference range, OR Odds ratio, CI confidence interval

Table 4 Adjusted Odds Ratio for associated factor of stress.

Associated factor	Adjusted Odds Ratio*	95%CI*	p value*
Abnormal BMI (<18.5 or ≥23.0 kg/m^2)	0.94	0.41 - 2.20	0.895
Gestational age (week)			0.404
<14	1.27	0.53 - 3.06	
14-28	1.90	0.75 - 4.84	
Obstetric complications comorbidity	2.51	1.04 - 6.08	0.040
Unplanned pregnancy	1.11	0.50 - 2.43	0.801
History of alcohol consumption	2.90	1.34 - 6.28	0.007
Family member has psychiatric disorder	12.19	2.10 - 70.75	0.005

CI; Confidence Interval

*Adjusted by maternal age, GA, history of obstetric complication comorbidities, history of alcohol consumption, family member has psychiatric disorder.

Discussion

Prevalence of stress in pregnancy, using the Thai GHQ-28 questionnaire, was 13.64%. This finding was lower than Thongsomboon et al[11], who reported the prevalence of perceived stress symptoms in antenatal pregnant women at 23.6% in urban areas of Thailand. This was also lower prevalence than other studies[10,12,13]. One possible explanation for the low prevalence of stress was depended on type of questionnaire test and the unique culture and lifestyle of Northeast Thai people. In these areas, the society was close relationship and had strongly supported from family member. The close-knit families consisting of grandparents and children can assist in coping with stress. Another explanation that the pregnant women in rural areas might have a little of stress levels in their self-physical concerns, delivery, or newborn care.

The ST-5 questionnaire was developed from the Suanprung stress questionnaire (SST-20 items) as a short version of 5 items[14]. The ST-5 questionnaire was first tested by healthcare providers at Srithanya hospital in 2008 and the results were correlated with moderate to high stress when compared with the SST-20. The good internal consistency for reliability testing of the ST-5 questionnaire with Cronbach's alpha at 0.824 was demonstrated in this study. For convergent validity testing, the ST-5 questionnaire displayed low correlation with all parts (items 1-28) of the Thai GHQ-28 questionnaire, p<0.001. Moreover, the ST-5 questionnaire showed very low correlation with each part of the Thai GHQ-28 including somatic symptoms, anxiety/insomnia, social dysfunction and severe depression, p<0.001, <0.001, <0.001 and 0.002, respectively. In fact, the ST-5 questionnaire is usually used to evaluate stress in the general population therefore it may have limited use for screening stress in the unique condition such as pregnancy. The specific screening questionnaire for pregnancy should be replaced in the Thai antenatal care book.

Our study found the factor including history of obstetric complication comorbidity[1], alcohol consumption[15] significantly increased stress in pregnancy, p = 0.040, and = 0.007, respectively. However, pregnancy with complication was not increase perceived of stress in Germany[16]. Most common obstetric complication co morbidity was diabetes mellitus, the women worried about the level of self-monitoring blood glucose, the strict low sugar meal, and the pregnancy outcomes. History of alcohol consumption is the one factor that increase stress in pregnancy. Only one pregnant woman continued to drink alcohol even she got pregnancy. The causation of drinking before or during pregnancy should be investigated. The women who had underlying disease of psychiatric disorder were increased anxiety and stress[17], while this study discovered other family members with psychiatric disorders also significantly increased maternal stress, p = 0.005. Apart from maternal underlying disease of psychiatric disorder, the healthcare providers should explore other family member for this condition to screen stress in pregnancy.

Factors including maternal age (both teenage and advanced maternal age)[15,18,19], abnormal BMI[19], no children in their house[15], gestational age[15,19], pregnancy

interval, low level of education[1,5,10,12], low-income[12,18], unplanned pregnancy[15,19], and duration of marriage before pregnancy[12] were not associated with stress. Our study agreed with the study in UK[3] that there was no significant difference in the psychological distress who have history of abortion, while some study[19,20] found history of miscarriage had higher levels of fear, stress, and anxiety. Maternal BMI was increasing perceived of stress[16]. Higher education was stated to high impact on maternal anxiety[12,19], however the study in China[21] found that low level of maternal education also had higher levels of stress. The previous negative experience delivery had been reported high level of stress and anxiety[22]. Unplanned pregnancy increases maternal stress[19,21], but these finding were not supported by our study. The study in Ghana[12] found that advanced GA increase maternal stress, while Statham H et al. showed the prevalence of worried about the baby was increased at only GA less than 16 weeks or more than 35 weeks[23]. Our findings concurred the previous study[24], which concluded that smoking, illicit drug use, parity, maternal race/ethnicity, and maternal age were not associated with anxiety and stress symptoms. Some previous studies[25–27] found that unplanned or unexpected pregnancy were risk factor of prenatal stress, but these findings were not encouraged by our results.

For optimal implementation, routine prenatal stress screening should be offered to all pregnant women. None of those, positively screened, were required to meet the psychiatrist. Therefore, mild to severe stress could be managed by healthcare providers at ANC clinic.

The strengths of this cross-sectional study included a large sample size and the similarity of participant demographics. The limitations were the only one-time point assessment, and the pregnancy outcomes were not followed up. The prevalence of stress may increase if the assessments are repeated at multiple time. Further studies are required to establish a longitudinal study with follow-up for both women and neonates for a comprehensive prenatal through post-natal stress assessment.

Conclusion

The prevalence of stress in pregnancy was 13.64%. The ST-5 questionnaire had low correlation with the Thai GHQ-28 questionnaire. Factors including history of obstetric complication comorbidities, alcohol consumption or family members with psychiatric disorders were significantly increased risks of stress.

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